

United States of America
Department of Transportation — Federal Aviation Administration
Supplemental Type Certificate

Number SA1747WE

This certificate, issued to Texas Airplane Mfg. Company, Inc.
P. O. Box 575
Addison, Texas 75001

*certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part * of the Civil Air*

Regulations. *See page 5 of this STC for Certification Basis

Original Product — Type Certificate Number: 807

Make: de Havilland

Model: D.H. 104 Dove Series 7A, 8A, 7AXC, 8AXC

Description of Type Design Change: Installation of AiResearch TPE 331 engines, increase in fuselage length and related changes in accordance with FAA Sealed Von Carstedt Master Drawing List No. CPD9996 or FAA Sealed Revision thereto.

Limitations and Conditions: The limitations and conditions of Aircraft Specification No. A-807 apply except as outlined in pages 3 through 7 of this STC. A copy of this STC must be included in the permanent records of each airplane modified in accordance with this STC.

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application: February 21, 1968

Date reissued: February 26, 1973

Date of issuance: July 23, 1968

Date amended: 12/29/69; 4/24/70; 5/27/70;
11/14/73; 9/5/74

By direction of the Administrator



Don P. Watson
(Signature)
Don P. Watson
Acting Chief, Engineering and Manufacturing Branch

(Title)

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

This certificate may be transferred in accordance with FAR 21.47.

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Supplemental Type Certificate
(Continuation Sheet)

September 5, 1974

Number SA1747WE

I - Model D.H. 104 Dove Series 7A, 8A, 7AXC or 8AXC as modified by this STC
(Normal Category)

Engines	Two AiResearch TPE 331-55B or TPE 331-1-101E. (Master Dwg. List No. CPD9996, Rev. G or subsequent, is required for TPE 331-1-101E engines).												
Fuel	Fuels conforming to AiResearch Manufacturing Company of Arizona Report PE-5064-R. Not eligible for operation with aviation gasoline.												
Oil	MIL-L-23699 type oils conforming to AiResearch Manufacturing Company of Arizona Report PE-5065-R.												
Engine Ratings	(See NOTE 3 for applicable conditions).												
Takeoff (5 min.)	605 equivalent shaft HP 575 shaft HP												
Maximum continuous	529 equivalent shaft HP 500 shaft HP												
Engine limits													
Propeller rpm	2000 maximum for steady state conditions 2100 maximum for 5 seconds transient overspeed 1920 minimum inflight cruise												
Torque													
Takeoff (5 min)	1512 lb.ft.												
Maximum continuous	1390 lb.ft.												
Exhaust gas temperature (standard sea level day)													
	<table border="0" style="width: 100%;"><thead><tr><th></th><th style="text-align: center;"><u>TPE331-55B</u></th><th style="text-align: center;"><u>TPE331-1-101E</u></th></tr></thead><tbody><tr><td>Takeoff (5 min.)</td><td>1061°F (571°C)</td><td>1072°F (578°C)</td></tr><tr><td>Maximum continuous</td><td>983°F (530°C)</td><td>1029°F (554°C)</td></tr><tr><td>Starting Transient (one second)</td><td>1500°F (815°C)</td><td>1450°F (788°C)</td></tr></tbody></table>		<u>TPE331-55B</u>	<u>TPE331-1-101E</u>	Takeoff (5 min.)	1061°F (571°C)	1072°F (578°C)	Maximum continuous	983°F (530°C)	1029°F (554°C)	Starting Transient (one second)	1500°F (815°C)	1450°F (788°C)
	<u>TPE331-55B</u>	<u>TPE331-1-101E</u>											
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(Normal Category)

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Fuel Fuels conforming to AiResearch Manufacturing Company of Arizona Report PE-5064-R. Not eligible for operation with aviation gasoline.

Oil MIL-L-23699 type oils conforming to AiResearch Manufacturing Company of Arizona Report PE-5065-R.

Engine Ratings (See NOTE 3 for applicable conditions).

Takeoff (5 min.) 605 equivalent shaft HP
575 shaft HP

Maximum continuous 529 equivalent shaft HP
500 shaft HP

Engine limits

Propeller rpm 2000 maximum for steady state conditions
2100 maximum for 5 seconds transient overspeed
1920 minimum inflight cruise

Torque

Takeoff (5 min) 1512 lb.ft.

Maximum continuous 1390 lb.ft.

Exhaust gas temperature (standard sea level day)

	<u>TPE331-55B</u>	<u>TPE331-1-101E</u>
Takeoff (5 min.)	1061°F (571°C)	1072°F (578°C)
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Engine Ratings	(See NOTE 3 for applicable conditions).	
Takeoff (5 min.)	605 equivalent shaft HP 575 shaft HP	
Maximum continuous	529 equivalent shaft HP 500 shaft HP	
Engine limits		
Propeller rpm	2000 maximum for steady state conditions 2100 maximum for 5 seconds transient overspeed 1920 minimum inflight cruise	
Torque		
Takeoff (5 min)	1512 lb.ft.	
Maximum continuous	1390 lb.ft.	
Exhaust gas temperature (standard sea level day)		
	<u>TPE331-55B</u>	<u>TPE331-1-101E</u>
Takeoff (5 min.)	1061°F (571°C)	1072°F (578°C)
Maximum continuous	983°F (530°C)	1029°F (554°C)
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FAA FORM 8110-2-1 (10-69)

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Maximum Baggage	Forward baggage compartment maximum loading weight 200 lbs. Sta. 35.48 Aft baggage compartment maximum loading weight 600 lbs. Sta. 362 - 432		
Fuel capacity	244 U.S. Gallons, 1635 lbs. Two tanks 122 U.S. Gallons each (-3) Fuel weight is based on 6.7 lbs. per gallon. See NOTE 1(b)		
Oil capacity	3 U.S. Gallons (-53) See NOTE 1(c)		
Control surface movements	Elevator	Up $26^{\circ} 30' + 1^{\circ}$	Down $13^{\circ} 30' + 1^{\circ}$
	Elevator Trim Tab (Elevator Neutral)	Up $10^{\circ} \pm 0^{\circ} 30'$	Down $21^{\circ} \pm 0^{\circ} 30'$
	Rudder	Right $25^{\circ} \pm 1^{\circ}$	Left $25^{\circ} \pm 1^{\circ}$
	Rudder Trim Tab	Right $18^{\circ} \pm 0^{\circ} 45'$	Left $18^{\circ} \pm 0^{\circ} 45'$
	Aileron	Up and Down $20^{\circ} \pm 1^{\circ}$	
	Aileron Trim Tab	Up $17^{\circ} \pm 0^{\circ} 30'$	Down $17^{\circ} \pm 0^{\circ} 30'$
	Flaps	Down $40^{\circ} \pm 1^{\circ}$	
Serial Numbers Eligible	All series 7A, 8A, 7AXC and 8AXC airplanes that are eligible for U.S. Airworthiness Certification under Type Certificate No. 807. See NOTE 5.		

Data Pertinent to All Models

Datum	The datum plate, located 31.2 inches aft of the front leveling peg on the left side of the fuselage. Horizontal arms to the C.G. of the items shown on this specification are plus (+) behind and minus (-) ahead of the datum.
Leveling Means	Datum pegs on left side of fuselage and datum pads on main spar in cabin.
Certification Basis	Original Type Certificate No. 807: CAR Part 10 Modifications covered by this STC: (1) For the powerplant installation - CAR Part 3 effective May 15, 1956, plus Amendments 3-1 through 3-8

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(c) The certificated empty weight and corresponding center of gravity locations must include system oil of one qt. total (-53) for both engines.

NOTE 2. Refer to Applicable FAA Approved Airplane Flight Manual for required placard and instrument markings. All required placards must be installed in the appropriate locations.

NOTE 3. The ratings shown on this STC for the TPE331-55B engines are based on standard sea level conditions, compressor-inlet air 15°C and 29.92 in. Hg. The takeoff and maximum continuous ratings shown for the TPE331-1-101E engines are available at sea level to 38.5°C and 43°C engine inlet temperature, respectively, or to 8,400 and 11,600 feet, respectively, on a standard temperature day. The ratings shown for either engine are based on dry inlet air, no external accessory loads, no air bleed or anti-icing airflow.

NOTE 4. The following aircraft parts are critical from the fatigue standpoint and must be replaced at the time specified:

- (1) Wing lower spar attach fittings - replace every 1800 hours time in service with new wing lower spar attach fittings, Von Carstedt Part Number CPD-2004.
- (2) Wing center section lower spar boom - replace every 1800 hours time in service in accordance with MOD 779 (See Hawker Siddeley Technical News Sheet Series CT(104) No. 119).

On completion of the modification specified in Airworthiness Directive AD 72-10-3 the service life of these parts is unlimited.

NOTE 5. The approval of this change in type design applies to the basic aircraft of the D.H. 104 Series models noted on page 1 of this STC that are otherwise unmodified. This approval should not be extended to other aircraft of these models on which other previously approved modifications are incorporated unless it is determined that the interrelationship between this change and any of those previously approved modifications will introduce no adverse effect on the airworthiness of the airplane.

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